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U. S. DEPARTMENT OF AGRICULTURE--FOREST SERVICE
PACIFIC SOUTHWEST FOREST AND RANGE EXPERIMENT STATION
Division of Forest Insect Research

FOREST INSECT CONDITIONS
McCLOUD FLAT
SHASTA-TRINITY NATIONAL FOREST
MARCH 1960

There has been a steady buildup of the bark-beetle populations in ponderosa pine east of McCloud for the past year. Station entomologists first observed group-killing of trees in this area in aerial surveys conducted in May 1959. The damage proved to be the work of ips and western pine beetles. A later aerial examination by the Station, conducted in October 1959, showed that the infestation was extensive enough to warrant listing McCloud Flat as one of California's major forest insect trouble spots. Local Forest Service district personnel inspected the area from the air in January and February 1960. Their observations prompted a verbal request from the Shasta-Trinity National Forest for an evaluation of the outbreak by the Station.

The evaluation was made on March 16 by B. E. Wickman with the help of local Forest Service and California Division of Forestry personnel. It consisted of two parts: an aerial examination and a subsequent ground examination of some of the groups seen from the air. Snow conditions prevented much of the infested area from being inspected on the ground.

The term "McCloud Flat" refers to the gross area of some $2\frac{1}{2}$ townships predominately U.S. ownership, immediately to the north and west of McCloud. The topography is characterized by a series of lava ash flats, some poorly stocked with ponderosa pine. Most of the area was cut over about sixty years ago, and the quality of the second-growth is variable. In some areas trees have reached a d.b.h. of 30 inches, in other places the trees are growing in dense thickets with growth stagnated at 8 inches d.b.h. and smaller. There are pine plantations scattered throughout the flat and TSI work has been applied to some stands indicating that the timber is under intensive management.

Aerial Examination

Approximately 45 minutes was spent gridding the infested area located in Township 40N, Ranges 1 and 2 West, and Township 41N, Range 1W. (See map)

There was a noticeable increase of faded trees since the October aerial examination. Large and small groups of faded pine were scattered throughout the area. Some groups contained 100 or more trees. An estimated 1,000-2,000 freshly faded trees were seen from the air. No attempt was made to get an exact count because of the rough air encountered during the flight.

Ground Examination

Several groups of dead or dying trees spotted from the air were examined on the ground. The groups were of three types: 1. freshly faded top-kills; 2. older fades; 3. green trees just beginning to turn yellow. A discussion of the findings in each type of group follows.

1. The freshly faded top-kills were thought to have ips beetles in the new adult stage in the upper portion of the bole; however, several trees of this type which were felled contained no brood. The adults had either emerged late last fall or were flying at the time of the examination. From conditions found in other nearby ips outbreaks, the latter was probably true. Although our sample was too small to be conclusive, indications are that ips beetle flights are beginning very early this year. Undoubtedly there are still some faded top-kills which contain brood. The top-killed pine ranged in diameter from 6 inches to 30 inches d.b.h. Some thickets of small, stagnated pine were hit heavily by the ips beetles.

2. One large group of older fades located about 2 miles south of the Pilgrim Creek Experiment Station was examined. The trees were mostly pole size, 10 inches to 20 inches d.b.h. All had been killed by the western pine beetle and abandoned. No new evidence of attacks was found in the green trees intermingled with the dead trees. The color of the needles, and the light woodpeckering, indicate that the brood emerged during the prolonged, warm, dry weather late last fall. Whether all of the emerging new adults had time to make successful attacks before winter set in is still uncertain.

3. Green trees just beginning to turn yellow are probably the only type that can be safely classified as infested if aerial spotting is used. Two ponderosa pines of this type were examined, and both contained heavy broods of western pine beetle larvae in the bark. Woodpeckering was very heavy. Similar work by woodpeckers was observed on six completely green trees surrounding the two yellow fades, indicating that they too were infested. This group was probably attacked late last fall. There was only one small, older faded tree near the group; no other abandoned trees were within sight. The diameter range in the infested trees was 8 inches to 16 inches. There was little evidence of parasitism in the trees examined.

Discussion

The bark beetle infestation on the McCloud Flat area has been increasing in intensity during the last year. Because large numbers of western pine beetle-infested trees are present, tree mortality will probably continue at a high level until artificial or natural control factors reduce the beetle population. Ips beetles are attacking and killing the tops of many large trees, making them highly susceptible to western pine beetle attack. Consequently, large top-killed pine should be removed from the woods whenever possible to reduce the chances of their being attacked by the western pine beetle. Smaller top-killed pine could be sprayed with lindane as a preventative measure in the course of treating western pine beetle-infested trees.

In the limited time remaining before the western pine beetle completes its development and emerges, highest priority should be given to locating and treating as many trees infested with western pine beetle as possible. Green infested trees can be spotted by the heavy woodpeckering on the lower half of the bole. The beetles will probably be flying by May 1; so treating after that time is not likely to be effective. If infested trees are to be logged, they should be removed from the woods by May 1. If this is not possible, then the felled trees must be treated if the beetles are to be killed. Otherwise, they will simply emerge and attack additional trees.

Instructions on the use of several different chemicals for direct bark-beetle control are available from the Experiment Station upon request.

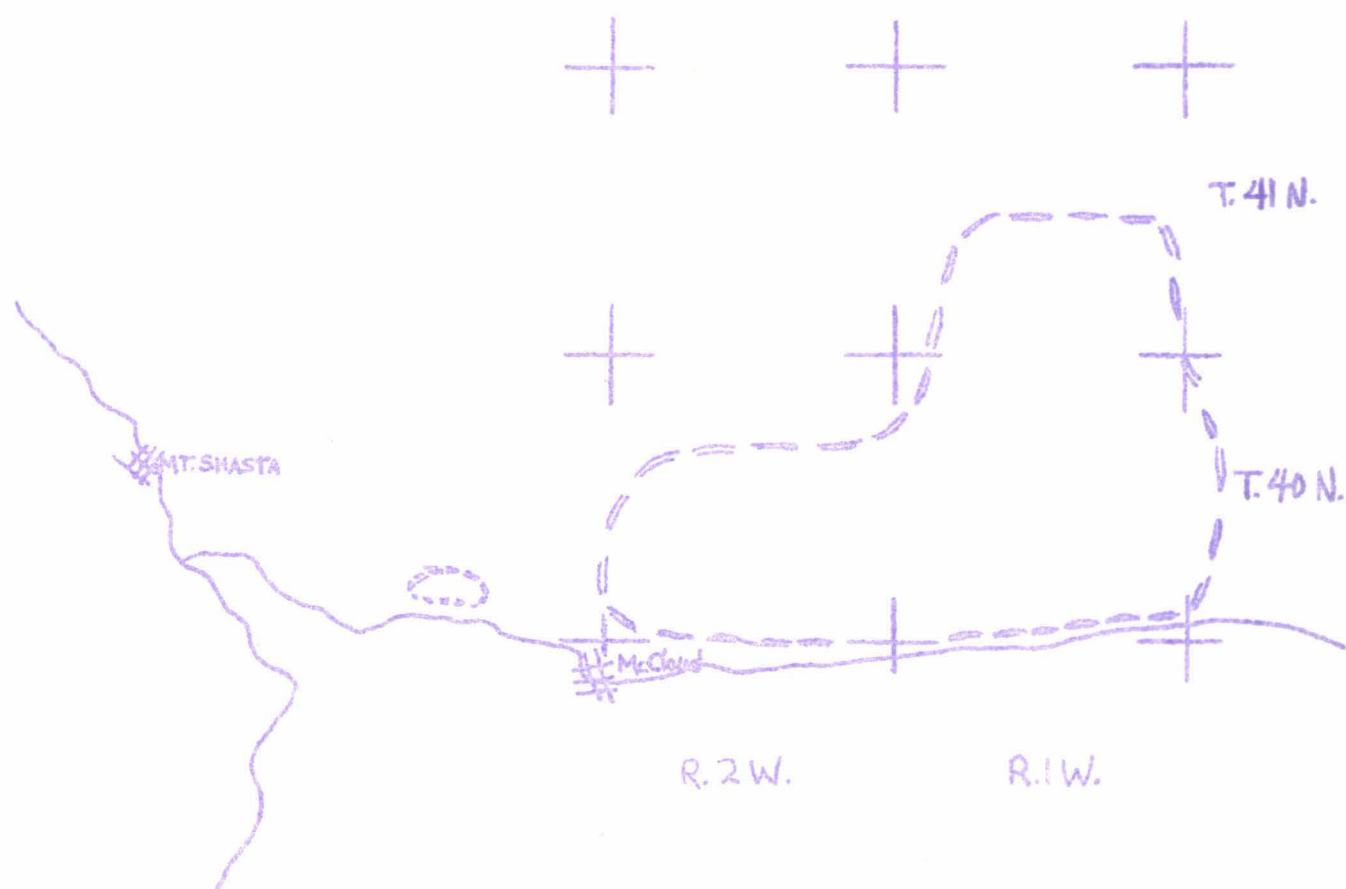
March 22, 1960
Berkeley, Calif.

Boyd E. Wickman,
Entomologist

Attachment

McCLOUD DISTRICT
SHASTA NATIONAL FOREST

0 1 2 3 Miles



McCLOUD FLAT INFESTATION

March, 1960